



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,936	11/20/2003	Jeffrey Douglas Brown	AUS920030612US1	3162
45327	7590	10/30/2008		
IBM CORPORATION (CS) C/O CARR LLP 670 FOUNDERS SQUARE 900 JACKSON STREET DALLAS, TX 75202			EXAMINER PASIA, REDENTOR M	
			ART UNIT	PAPER NUMBER
			2416	
			MAIL DATE	DELIVERY MODE
			10/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/718,936	Applicant(s) BROWN ET AL.	
	Examiner REDENTOR M. PASIA	Art Unit 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 11 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 and 10-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-9 and 15-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

*****Please note that AU 2616 has been changed to AU 2416*****

Election/Restrictions

1. Applicant's election of Group V and claims 7-9 with traverse in the reply filed on 7/11/2008 is acknowledged. However, it is noted that applicant did not distinctly and specifically point out the supposed errors in the restriction requirement (MPEP § 818.03(a)).
2. Claims 1-6, 10-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on July 11, 2008. Also, claims 15-23 are added.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: claim 9 shows "a computer program having a medium with a computer program embodied thereon". There is insufficient antecedent basis for this limitation in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 9 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 9 shows the “claim limitation “the computer program having a medium with a computer program embodied thereon.” Examiner respectfully suggests to Applicant to specifically point out in which part of the specification that it shows “claim limitation “the computer program having a medium with a computer program embodied thereon.”

6. Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 20 shows the claim limitations “payload class” and “class restriction status”. However, the specification does not provide specific information as to which the claim limitations “payload class” and “class restriction status” refers to and thus not enable one of ordinary skill in the art to fully establish the claim (claim 20) presented.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 2416

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 7, 9, 15, 19-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 7 recites the limitation "said communication path" in line 11. It is unclear as to which "said communication path" refers to. It is suggested to revise "said communication path" in line 11 to "[[said]] a communication path" since this is the first time the claim limitation is presented. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 9 recites the limitation "a computer program" in line 27. It is unclear if "a computer program" in line 27 is related to "a computer program" in line 25. If they are related, "a computer program" in line 27 must be revised to "[[a]] the computer program". If they are not related, "a computer program" in line 27 must be revised to "a second computer program". There is insufficient antecedent basis for this limitation in the claim.

11. Claim 15 recites the limitation "a bus" in line 22. It is unclear if "a bus" in line 22 is related to "a bus" in line 11. If they are related, "a bus" in line 22 must be revised to "[[a]] the bus". If they are not related, "a bus" in line 22 must be revised to "a second bus". There is insufficient antecedent basis for this limitation in the claim.

12. Claim 19 recites the limitation "a bus" in line 19. It is unclear if "a bus" in line 19 is related to "a bus" in line 8. If they are related, "a bus" in line 19 must be revised to "[[a]] the bus". If they are not related, "a bus" in line 19 must be revised to "a second bus". There is insufficient antecedent basis for this limitation in the claim

Art Unit: 2416

13. Claim 15 and 19 recites **various instances** of "N". Claim language presented in claim 15 and 19 shows "N" being a number. However, it is not defined what value N is supposed to be (i.e. N being at least 1). Thus, in this instance, "N" does not specifically show which integer or group/range of integers to which N belongs to and thus making the claim language indefinite. In the examination of the claims, the Examiner has applied the broadest reasonable interpretation to "N" and thus, the Examiner has interpreted "N" as being any number and that the instance of "N" in claim 15 are not related to each other.

Claim Rejections - 35 USC § 101

14. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

15. Claims 9 and 19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 9 is directed to "a computer program". A computer program is directed to a non-statutory subject matter.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2416

17. Claims 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Chapman et al. (US 6,628,609; hereinafter Chapman).

As to claim 7, Chapman shows a shaper apparatus (Figure 8, Bandwidth Control System) for multiplex communication path access control (Figure 5; col. 3, lines 8-19; regulating the transport of data units in said switch where the switch includes a switch fabric that includes a plurality of logical pathways) in a computer system (Figures 1-3), comprising:

segregation means (Figure 8, Bandwidth Control System) for removing path use requests (Figure 5, step 518; stop requests for service when condition 514 is met; it is noted that the requests for service indicated show a request to release packet onto the switch fabric) that are presently authorized for managed (note bandwidth managed control in relation to Hi priority) access to a special queue (Figure 5, related steps 502 onwards; it is shown that prior to step 518, the traffic class (priority) of the incoming packet and other corresponding information is determined in order to determine which particular queue (claimed special queue), the incoming packet belongs. The claim language presented shows “requests that are presently authorized.” However, the claim language provided does not specifically show the manner in which authorization is applied to the request. Given this, the Examiner has viewed the above-mentioned claim limitation as also being the same as requests that belong to a specific priority where the request has access to a queue that has the same specific priority. This interpretation will also be applied to the remainder of the Office Action. Chapman shows in Figure 5-6 and in col. 14, line 57 to col. 15, line 3 that each particular class of traffic going to a particular output port requires its own virtual queue (Figures 604, 606) that each has its own priority (i.e. Hi or Lo).); and

Art Unit: 2416

path access means (Figure 8, Bandwidth Control System) operable to provide access to said communication path (Figure 2 and 6, switch fabric 210 having logical pathways) of a given authorized managed access request (Figure 5, step 520 onward; col. 15, lines 10-17; a data packet transmission request for queue 606 is sent to the fabric controller, after which the program element must wait for a reply. At step 522, a message arrives from the fabric controller, instructing input port A to release a data packet from queue 606 to the switch fabric 210. The switch fabric then routes the packet over its logical pathway to the appropriate output port.)

when it is determined that a predetermined BW (Bandwidth) of data has not already been transmitted over the path (Figure 5, prior to step 520, steps 508 and 510 are performed, where the program element (of the bandwidth control system) determines the output rate of the queue at step 508 and 510 and compares the measured value to the queue's minimum and maximum allocated bandwidths. Taking into consideration step 508, if there is a difference between the output rate and the minimum bandwidth allocated, the difference can be seen as a capacity to transmit more data (i.e. increase the bandwidth of data to transmit more). In this instance, it can be seen the difference between the comparison is the claimed predetermined bandwidth of data that has not been transmitted.) during a present operational period (Note that figure 5 shows multiple steps performed on multiple incoming packets. Thus, the operation of Figure 5 on a particular packet is seen as an operational period for that particular packet.)

where different managed data requesters may have different authorized BW allocations (Figure 4 shows the configuration table that includes the assigned bandwidth allocations per port (with corresponding logical pathway). Col. 12, lines 4-30 shows the configuration table also takes into consideration the priorities set for each virtual queue (i.e. either C1/C2 or Hi/Lo).).

Art Unit: 2416

As to claim 8, Chapman shows a method (Figure 5, 8; note method performed by Bandwidth Control System) of managing access to a multiplex communication path (Figure 5; col. 3, lines 8-19; regulating the transport of data units in said switch where the switch includes a switch fabric that includes a plurality of logical pathways) in a computer system (Figures 1-3), comprising:

removing path use requests (Figure 5, step 518; stop requests for service when condition 514 is met; it is noted that the requests for service indicated show a request to release packet onto the switch fabric) that are presently authorized for managed (note bandwidth managed control in relation to Hi priority) access to a special queue (Figure 5, related steps 502 onwards; it is shown that prior to step 518, the traffic class (priority) of the incoming packet and other corresponding information is determined in order to determine which particular queue (claimed special queue), the incoming packet belongs. The claim language presented shows “requests that are presently authorized.” However, the claim language provided does not specifically show the manner in which authorization is applied to the request. Given this, the Examiner has viewed the above-mentioned claim limitation as also being the same as requests that belong to a specific priority where the request has access to a queue that has the same specific priority. This interpretation will also be applied to the remainder of the Office Action. Chapman shows in Figure 5-6 and in col. 14, line 57 to col. 15, line 3 that each particular class of traffic going to a particular output port requires its own virtual queue (Figures 604, 606) that each has its own priority (i.e. Hi or Lo.); and

providing priority access to said communication path (Figure 2 and 6, switch fabric 210 having logical pathways), of a given authorized managed access request (Figure 5, step 520

Art Unit: 2416

onward; col. 15, lines 10-17; a data packet transmission request for queue 606 is sent to the fabric controller, after which the program element must wait for a reply. At step 522, a message arrives from the fabric controller, instructing input port A to release a data packet from queue 606 to the switch fabric 210. The switch fabric then routes the packet over its logical pathway to the appropriate output port.),

when it is determined that a predetermined BW (Bandwidth) of data has not already been transmitted over the path (Figure 5, prior to step 520, steps 508 and 510 are performed, where the program element (of the bandwidth control system) determines the output rate of the queue at step 508 and 510 and compares the measured value to the queue's minimum and maximum allocated bandwidths. Taking into consideration step 508, if there is a difference between the output rate and the minimum bandwidth allocated, the difference can be seen as a capacity to transmit more data (i.e. increase the bandwidth of data to transmit more). In this instance, it can be seen the difference between the comparison is the claimed predetermined bandwidth of data that has not been transmitted.) during a present operational period (Note that figure 5 shows multiple steps performed on multiple incoming packets. Thus, the operation of Figure 5 on a particular packet is seen as an operational period for that particular packet.)

where different managed data requesters may have different authorized BW allocations (Figure 4 shows the configuration table that includes the assigned bandwidth allocations per port (with corresponding logical pathway). Col. 12, lines 4-30 shows the configuration table also takes into consideration the priorities set for each virtual queue (i.e. either C1/C2 or Hi/Lo).).

As to claim 9, Chapman shows a computer program (Figure 3, 8; col. 11, line 57 to col. 12, line 10; the memory 310 contain a program element that controls the operation of the

Art Unit: 2416

interface, an important component of the bandwidth control system; Figure 5 shows the operation of the program element stored in memory 310 and executed by processor 308) for managing access to a multiplex communication path (Figure 5; col. 3, lines 8-19; regulating the transport of data units in said switch where the switch includes a switch fabric that includes a plurality of logical pathways) in a computer system (Figures 1-3), the computer program having a medium with a computer program embodied thereon (Figure 3, memory 310 contains program element), the computer program comprising:

computer code executed in the computer system for removing path use requests (Figure 5, step 518; stop requests for service when condition 514 is met; it is noted that the requests for service indicated show a request to release packet onto the switch fabric) that are presently authorized for managed (note bandwidth managed control in relation to Hi priority) access to a special queue (Figure 5, related steps 502 onwards; it is shown that prior to step 518, the traffic class (priority) of the incoming packet and other corresponding information is determined in order to determine which particular queue (claimed special queue), the incoming packet belongs. The claim language presented shows “requests that are presently authorized.” However, the claim language provided does not specifically show the manner in which authorization is applied to the request. Given this, the Examiner has viewed the above-mentioned claim limitation as also being the same as requests that belong to a specific priority where the request has access to a queue that has the same specific priority. This interpretation will also be applied to the remainder of the Office Action. Chapman shows in Figure 5-6 and in col. 14, line 57 to col. 15, line 3 that each particular class of traffic going to a particular output port requires its own virtual queue (Figures 604, 606) that each has its own priority (i.e. Hi or Lo.); and

Art Unit: 2416

computer code for providing priority access to said communication path (Figure 2 and 6, switch fabric 210 having logical pathways), of a given authorized managed access request (Figure 5, step 520 onward; col. 15, lines 10-17; a data packet transmission request for queue 606 is sent to the fabric controller, after which the program element must wait for a reply. At step 522, a message arrives from the fabric controller, instructing input port A to release a data packet from queue 606 to the switch fabric 210. The switch fabric then routes the packet over its logical pathway to the appropriate output port.),

when it is determined that a predetermined BW (Bandwidth) of data has not already been transmitted over the path (Figure 5, prior to step 520, steps 508 and 510 are performed, where the program element (of the bandwidth control system) determines the output rate of the queue at step 508 and 510 and compares the measured value to the queue's minimum and maximum allocated bandwidths. Taking into consideration step 508, if there is a difference between the output rate and the minimum bandwidth allocated, the difference can be seen as a capacity to transmit more data (i.e. increase the bandwidth of data to transmit more). In this instance, it can be seen the difference between the comparison is the claimed predetermined bandwidth of data that has not been transmitted.) during a present operational period (Note that figure 5 shows multiple steps performed on multiple incoming packets. Thus, the operation of Figure 5 on a particular packet is seen as an operational period for that particular packet.)

where different managed data requesters may have different authorized BW allocations (Figure 4 shows the configuration table that includes the assigned bandwidth allocations per port (with corresponding logical pathway). Col. 12, lines 4-30 shows the configuration table also

Art Unit: 2416

takes into consideration the priorities set for each virtual queue (i.e. either C1/C2 or Hi/Lo).).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claims 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (US 6,628,609; hereinafter Chapman) in view of Agrawal et al. (US 7,006,440; hereinafter Agrawal) in further view of Lee et al. (US 7,224,671; hereinafter Lee).

As to claim 15, Chapman shows wherein the multiplex communication path is a bus (col. 10, lines 21-22, note that switch fabric can be a common medium bus),

Art Unit: 2416

and the managing access comprises a step of monitoring activity BW (Bandwidth) for use by a BW managed (Figure 6, virtual queue for Hi priority) and BW unmanaged entity (Figure 6, virtual queue 604 for Lo priority) wishing to transmit data over said bus (Figure 5; col. 13, line 67 to col. 14, line 17; the program element (bandwidth control system) identifies the requesting queue, its priority and destination output port for each request. Higher priority requests are given priority over low priority requests. The distinction of the terms “managed” and “unmanaged”, given the broadest reasonable interpretation in light of the specification, is also disclosed by Chapman in the above citations. Hi traffic requests are given priority over Lo traffic requests, thus, in this instance, the Hi traffic requests are “managed” for permission for transfer over Lo priority requests. Only when there are no Hi traffic request, then the Lo traffic requests are taken into consideration and thus making the Lo traffic requests being “unmanaged”).

and wherein the monitoring activity further comprises steps of:

submitting a request (Figure 5, send data packet transmission request), from a BW managed first entity (Figure 6, queue 606 with Hi priority), for a given bandwidth (note request in Figure 5 is for a data packet transmission onto a logical pathway with a predetermined bandwidth allocation, see col. 15, lines 12-17; Figure 4) to an assignment entity (col. 15, lines 10-11, request sent to fabric controller);

returning an assigned unique identity and a designated allowable BW from said assignment entity to said first entity (Figure 5, step 522, message arrives at queue 606 from fabric controller; col. 14, lines 18-33; The actual release of an IP data packet to the switch fabric occurs when the fabric controller signals the queue to send out a packet, through the permission message sent from the fabric controller to the queue's interface. The signal includes the queue

Art Unit: 2416

identifier (claimed unique identity) to allow the interface of the addressed queue to properly recognize the signal. The algorithm also ensures that particular class of traffic a minimum allocated bandwidth (claimed designated allowable BW) over a logical pathway; Figure 4.);

sending data packets (Figure 5; col. 15, line 14-16; release data packet from queue 606 for transmission onto switch fabric 220) from said first entity (Figure 5-6; queue 606) to a load shaping entity (Figure 8, bandwidth control mechanism assigned to a given logical pathway) for transmission on a bus attended by said load shaping entity (col. 10, line 50-67; shows that bandwidth control system includes multiple bandwidth control mechanisms assigned to each logical pathway; note that upon release of packet (refer to Figure 5), the packet is released onto a logical pathway connected to a particular port to which the packet is addressed (per destination address in header of packet – col. 14, lines 34-67) to.),

each of said data packets providing class priority information including a (said) unique identity (col. 14, lines 44-57; class (priority) of the packet can be determined by the type of service (TOS) field or the source and destination addresses included in the header).;

reserving (figure 12, requesting free slots) a number N (col. 20, line 10-16, 26 request for 26 free slots) of spaced apart time slots (Figure 10, shows ring time slots with appropriated spaces), commensurate with said designated BW, over a predetermined number of time slots (col. 20, line 10-16 shows the total number of free time slots (i.e. 26) required by input port A in order to achieve its own allocated minimum bandwidth (claimed commensurate with designated BW).), for use by said first entity for as long as said first entity continues to supply said data packets for transmission; and

Art Unit: 2416

and permitting transmission of data packets over said bus by unmanaged entities when no managed BW entity data packets await transmission (col. 14, lines 11-17; when there no Hi traffic requests for any logical pathway ending in a particular output port, and only LO traffic requests are stored in memory, the fabric controller uses a round-robin approach to schedule packet release permissions.)

First, even though Chapman discloses BW managed and unmanaged entities (note queues disclosed above), Chapman does not discloses a plurality of each entity.

Second, even though Chapman discloses said assigned unique identity and designated allowable BW as shown above, Chapman does not specifically disclose the step of supplying related information from assignment entity to a load shaping entity upon receipt, by said assignment entity, of acceptance of said BW by said first entity.

Third, Chapman does not specifically disclose maintaining a count of data packets processed over said predetermined number of time slots to prevent said first entity from accessing the bus more than N times in said predetermined number of time slots; resetting the count to a given value commensurate with N every predetermined number of time slots.

However, the above-mentioned claim limitations are well-established in the art as evidenced by Agrawal. Agrawal shows (col. 2, lines 31-36) a communications network having a class-based queuing architecture where shared class queues receive packet flows from different customers. In one embodiment, there are eight classes and thus eight shared queues, one for each class. A scheduler schedules the output of packets by the various queues based on priority.

Specifically, Agrawal shows a plurality of each entity (Figure 6 shows multiple class-based queues). Also, Agrawal shows the step of supplying related information from assignment

Art Unit: 2416

entity (Figure 5 shows customer identifier detecting the particular fields of interest (i.e. ID, source, destination, port ID, etc.) in the packet header) to a load shaping entity upon receipt (Figure 2, note that the same information is sent to shaper 76), by said assignment entity, of acceptance of said BW by said first entity (Figure 5, Pass packet 92 also indicates acceptance).

In view of the above, having the system of Chapman, then given the well-established teachings of Agrawal, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Chapman as taught by Agrawal in order to limit each customer to a maximum space allocation in a class queue in order to ensure that all customers get fair use of the queue in case of bursting (col. 3, lines 1-5).

Still, modified Chapman does not show maintaining a count of data packets processed over said predetermined number of time slots to prevent said first entity from accessing the bus more than N times in said predetermined number of time slots; resetting the count to a given value commensurate with N every predetermined number of time slots.

However, the above-mentioned claim limitations are well-established in the art as evidenced by Lee. Specifically, Lee shows maintaining a count of data packets processed over said predetermined number of time slots (Figure 13, bandwidth allocation counter 166; col. 11, lines 4-14; The current bandwidth allocation counter 166 indicates how much bandwidth is currently available for a particular input-output port. The counter 166 is decremented by one every time slot the input port(i) accepts a grant from the output port (j). It is noted that a grant is an indication to allow allocation of bandwidth in order to transmit packets.) to prevent said first entity from accessing the bus more than N times in said predetermined number of time slots (col.

Art Unit: 2416

11, lines 4-14; When the counter 166 counts down to zero, the input port(i) is prohibited from transmitting to output port (j) until another allocation is provided by down counter 162.);

resetting the count (Figure 13, peak time slot rate down counter 162) to a given value commensurate with N every predetermined number of time slots (col. 10, lines 56-63; When the value is counted down to zero, the down counter 162 generates a signal to the current bandwidth allocation counter 166 adding one bandwidth allocation for the associated input port. In this instance, by generating a signal to add one bandwidth allocation, the count is reset to a value.).

In view of the above, having the system of modified Chapman then given the well-established teachings of Lee, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of modified Chapman in order to fairly and efficiently arbitrate among the requesting input ports (col. 1, lines 24-35).

As to claim 19, this claim is rejected using the same reasoning set forth in the rejection of claim 15.

21. Claims 16-17, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (US 6,628,609; hereinafter Chapman) in view of Ma et al. (US 6,798,743; hereinafter Ma) in further view of Chapman et al. (US 6,304,552; hereinafter Chapman 552).

As to claim 16, Chapman shows the multiplex communication path is a bus (col. 10, lines 21-22, note that switch fabric can be a common medium bus), and

the managing access comprises a step of monitoring activity BW (Bandwidth) for use by a BW managed (Figure 6, virtual queue for Hi priority) and BW unmanaged entity (Figure 6, virtual queue 604 for Lo priority) wishing to transmit data (data packets) over said bus (Figure 5;

Art Unit: 2416

col. 13, line 67 to col. 14, line 17; the program element (bandwidth control system) identifies the requesting queue, its priority and destination output port for each request. Higher priority requests are given priority over low priority requests. The distinction of the terms “managed” and “unmanaged”, given the broadest reasonable interpretation in light of the specification, is also disclosed by Chapman in the above citations. Hi traffic requests are given priority over Lo traffic requests, thus, in this instance, the Hi traffic requests are “managed” for permission for transfer over Lo priority requests. Only when there are no Hi traffic request, then the Lo traffic requests are taken into consideration and thus making the Lo traffic requests being “unmanaged”).),

and wherein the monitoring activity further comprises steps of:

checking received data packets (Note that Figure 5 shows packet inspection for a given packet in an instant of an operational period. However, claim language does not specifically show that packets are checked simultaneously or in parallel. Thus, the Examiner interprets this claim limitation as being the same as checking packets over a given operational period of time. In this sense, Figure 5 of Chapman can check a plurality of packets in a given operational period.) to ascertain whether they belong to a managed class (Figure 5, step 502, determine traffic class of data packet);

placing data packets in a first queue (Figure 6, queue 604 for Lo priority packets) for transmission on a best efforts basis (col. 14, lines 4-17, shows Lo packets are transmitted only when there no more Hi traffic requests for transmission of Hi priority packets. Since, the Lo priority is not given any priority over Hi priority, the Lo priority packets are transmitted in a best-effort basis compared to the transmission of Hi priority requests.);

Art Unit: 2416

checking remaining data packets (Figure 5, steps 510, 514), determined to presently be authorized for management (Figure 6, data packets currently in queue 606 which was previously determined to belong to that class), to ascertain if BW (Bandwidth) authorized for the source (Figure 4 and 8, note the input port related to the logical pathway to be requested by incoming packet.) of the data packets has been exceeded for the present operational time period (Note that Figure 5 steps 510, 514 checks if bandwidth can still be allocated for a given request for packet transmission on a given logical pathway. The determination of class (i.e. Hi priority) was performed prior to checking and bandwidth.); and

placing data packets in a second queue (Figure 6, queue 606 for Hi priority) unique to that class source of data (Figure 5-6, incoming packets are either classified as being Hi or Lo), said second queue having priority over said first queue (Figure 5-6, queue 606 has Hi priority and queue 604 has Lo priority).

First, Chapman shows that alternatively, the class could be determined by the combination of inspection of source, destination address or among the other existing elements that can from convention designate the traffic class (col. 14, lines 47-51). Still, even though Chapman shows all of the elements stated above, Chapman does not specifically shows checking data packets ascertained to be in a managed class to determine if they originate from a source that is presently authorized to be managed; placing data packets, determined to have no present authorization to be managed, in said first queue for transmission on a best efforts basis.

Second, Chapman shows placing of data packets in a second queue prior to determining bandwidth. A person of ordinary skill in the art would be motivated to rearrange the parts since it only involves a routine skill in the art. Still, Chapman does not disclose placing data packets in

Art Unit: 2416

a queue after determination of authorization to be managed and determination of BW remaining in the present operational time period.

However, the above-mentioned claim limitations are well-established in the art as evidenced by Ma. Ma shows a two-phase packet processing technique is provided for routing traffic in a packet-switched, integrated services network which supports a plurality of different service classes (abstract).

Specifically, Ma shows checking data packets ascertained to be in a managed class to determine if they originate from a source that is presently authorized to be managed (Figure 7-8; the associated priority level of a packet may be determined by examining other information such as the source address.);

placing data packets, determined to have no present authorization to be managed, in said first queue for transmission on a best efforts basis (col. 9, lines 29-67; each queued packet may have a different associated priority level which specifies the particular Quality of Service (QoS) level to be used when handling that packet. Each computer network may support a variety of different QoS priority levels, which may include, for example, high priority service for multimedia traffic (e.g., voice and/or video streams), and low priority service for best effort traffic. Further, the best effort traffic may also be subdivided into a plurality of differentiated priority levels within the best effort class. The packet is then encapsulated and routed to its appropriate output interface queue within QoS output queuing structure 710. Typically, each queue (e.g., Q0, Q1, etc.) is a separate FIFO queue representing a distinct priority level of the QoS priority classes.)

Art Unit: 2416

In view of the above, having the system of Chapman then given the well-established teaching of Ma, it would have been obvious to one of ordinary skill in the art to modify the system of Chapman as taught by Ma in order to significantly reduce the packet latency associated with routing high priority or delay sensitive packets (col. 5, lines 9-10).

Still, modified Chapman does not show placing data packets a queue after determination of authorization (priority) to be managed and determination of BW remaining in the present operational time period.

However, the above-mentioned claim limitations are well-established in the art as evidence by Chapman 552. Chapman 552 shows a similar invention to Chapman that specifically discloses a control mechanism prevents and reduces congestion which may occur within the switch fabric and at the level of the input and output ports. The system also supports priorities, routing HI priority request data packets over the switch fabric before LO priority request data packets, and discarding LO priority data packets first when controlling congestion (abstract).

Specifically, Chapman 552 shows placing data packets a queue after determination of authorization (priority) to be managed and determination of BW remaining in the present operational time period (Figure 9 shows that the information (source address) related to the incoming packet is determined in step 902, and also does a further determination in step 908 where it checks whether the queue's buffer fill is less than a given threshold. Col 13, lines 12 to 33 shows the control next passes to the discard control system and each queue is checked for congestion at step 908. If the buffer fill is below the threshold setting indicated by the threshold table held in memory 810 and associated with that particular queue, all packets arriving for the

Art Unit: 2416

queue will be accepted at step 910. If the overall allocation of the guaranteed bandwidth available on outgoing links from the switch has been done conservatively, there will be no need to discard arriving HI priority traffic and it should be noted that Hi priority packets will be enqueued.).

In view of the above, having the system of modified Chapman then given the well-established teaching of Chapman 552, it would have been obvious to one of ordinary skill in the art to modify the system of modified Chapman as taught by Chapman 552 in order to improve the management of IP-layer bandwidth allocation and packet discard within a lossy data communication network arrangement (col. 2, lines 55-57).

As to claim 17, further modified Chapman shows placing data packets, determined to have present authorization to be managed and to have no BW remaining in the present operational time period in a delay queue for transmission in a later time period (Figure 5, step 516, queue priority is set to Lo after the determination of the traffic class (claimed authorization) and after the determination of output rate in step 514 (claimed BW requirement). Note that incoming packets assigned to Lo queue are only transmitted once all the Hi priority transmission is finished as shown in col. 14, lines 11-17.).

As to claim 23, Chapman shows selectively queuing (Figure 5, steps 502-506; Figure 6) data packets for transmission from a source to targets over the multiplexed communication path (Figure 5; note the classes of incoming packets are determined (by inspections of TOS, source address, or destination address or in combination. The incoming packets are queued to respective queues depending on the priorities that were previously determined. Priority transmission is performed afterwards along logical pathways.), comprising:

Art Unit: 2416

means for checking received data packets (Note that Figure 5 shows packet inspection for a given packet in an instant of an operational period. However, claim language does not specifically show that packets are checked simultaneously or in parallel. Thus, the Examiner interprets this claim limitation as being the same as checking packets over a given operational period of time. In this sense, Figure 5 of Chapman can check a plurality of packets in a given operational period.) to ascertain whether they belong to a managed class (Figure 5, step 502, determine traffic class of data packet);

means for placing data packets in a first queue (Figure 6, queue 604 for Lo priority packets) for transmission on a best efforts basis (col. 14, lines 4-17, shows Lo packets are transmitted only when there no more Hi traffic requests for transmission of Hi priority packets. Since, the Lo priority is not given any priority over Hi priority, the Lo priority packets are transmitted in a best-effort basis compared to the transmission of Hi priority requests.);

means for checking remaining data packets (Figure 5, steps 510, 514), determined to presently be authorized for management (Figure 6, data packets currently in queue 606 which was previously determined to belong to that class), to ascertain if BW (Bandwidth) authorized for the source (Figure 4 and 8, note the input port related to the logical pathway to be requested by incoming packet.) of the data packets has been exceeded for the present operational time period (Note that Figure 5 steps 510, 514 checks if bandwidth can still be allocated for a given request for packet transmission on a given logical pathway. The determination of class (i.e. Hi priority) was performed prior to checking and bandwidth.); and

means for placing data packets in a second queue (Figure 6, queue 606 for Hi priority) unique to that class source of data (Figure 5-6, incoming packets are either classified as being Hi

Art Unit: 2416

or Lo), said second queue having priority over said first queue (Figure 5-6, queue 606 has Hi priority and queue 604 has Lo priority).

First, Chapman shows that alternatively, the class could be determined by the combination of inspection of source, destination address or among the other existing elements that can from convention designate the traffic class (col. 14, lines 47-51). Still, even though Chapman shows all of the elements stated above, Chapman does not specifically show means for checking data packets ascertained to be in a managed class to determine if they originate from a source that is presently authorized to be managed; means for placing data packets, determined to have no present authorization to be managed, in said first queue for transmission on a best efforts basis.

Second, Chapman shows placing of data packets in a second queue prior to determining bandwidth. A person of ordinary skill in the art would be motivated to rearrange the parts since it only involves a routine skill in the art. Still, Chapman does not disclose means for placing data packets in a queue after determination of authorization to be managed and determination of BW remaining in the present operational time period.

However, the above-mentioned claim limitations are well-established in the art as evidence by Ma. Ma shows a two-phase packet processing technique is provided for routing traffic in a packet-switched, integrated services network which supports a plurality of different service classes (abstract).

Specifically, Ma shows means for checking data packets ascertained to be in a managed class to determine if they originate from a source that is presently authorized to be managed

Art Unit: 2416

(Figure 7-8; the associated priority level of a packet may be determined by examining other information such as the source address.);

means for placing data packets, determined to have no present authorization to be managed, in said first queue for transmission on a best efforts basis (col. 9, lines 29-67; each queued packet may have a different associated priority level which specifies the particular Quality of Service (QoS) level to be used when handling that packet. Each computer network may support a variety of different QoS priority levels, which may include, for example, high priority service for multimedia traffic (e.g., voice and/or video streams), and low priority service for best effort traffic. Further, the best effort traffic may also be subdivided into a plurality of differentiated priority levels within the best effort class. The packet is then encapsulated and routed to its appropriate output interface queue within QoS output queuing structure 710. Typically, each queue (e.g., Q0, Q1, etc.) is a separate FIFO queue representing a distinct priority level of the QoS priority classes.)

In view of the above, having the system of Chapman then given the well-established teaching of Ma, it would have been obvious to one of ordinary skill in the art to modify the system of Chapman as taught by Ma in order to significantly reduce the packet latency associated with routing high priority or delay sensitive packets (col. 5, lines 9-10).

Still, modified Chapman does not show means for placing data packets a queue after determination of authorization (priority) to be managed and determination of BW remaining in the present operational time period.

However, the above-mentioned claim limitations are well-established in the art as evidence by Chapman 552. Chapman 552 shows a similar invention to Chapman that

Art Unit: 2416

specifically discloses a control mechanism prevents and reduces congestion which may occur within the switch fabric and at the level of the input and output ports. The system also supports priorities, routing HI priority request data packets over the switch fabric before LO priority request data packets, and discarding LO priority data packets first when controlling congestion (abstract).

Specifically, Chapman 552 shows means for placing data packets a queue after determination of authorization (priority) to be managed and determination of BW remaining in the present operational time period (Figure 9 shows that the information (source address) related to the incoming packet is determined in step 902, and also does a further determination in step 908 where it checks whether the queue's buffer fill is less than a given threshold. Col 13, lines 12 to 33 shows the control next passes to the discard control system and each queue is checked for congestion at step 908. If the buffer fill is below the threshold setting indicated by the threshold table held in memory 810 and associated with that particular queue, all packets arriving for the queue will be accepted at step 910. If the overall allocation of the guaranteed bandwidth available on outgoing links from the switch has been done conservatively, there will be no need to discard arriving HI priority traffic and it should be noted that Hi priority packets will be enqueued.).

In view of the above, having the system of modified Chapman then given the well-established teaching of Chapman 552, it would have been obvious to one of ordinary skill in the art to modify the system of modified Chapman as taught by Chapman 552 in order to improve the management of IP-layer bandwidth allocation and packet discard within a lossy data communication network arrangement (col. 2, lines 55-57).

Art Unit: 2416

22. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (US 6,628,609; hereinafter Chapman) in view of Ma et al. (US 6,798,743; hereinafter Ma) in further view of Chapman et al. (US 6,304,552; hereinafter Chapman 552) in further view of Lee et al. (US 7,224,671; hereinafter Lee).

As to claim 18, further modified Chapman shows all of the elements except maintaining a count of the number of managed data packets transmitted by a given presently authorized managed data source in a given operational time period as a way of ascertaining BW; and reinitializing the count each operational time period.

However, the above-mentioned claim limitations are well-established in the art as evidenced by Lee. Specifically, Lee shows maintaining a count of the number of managed data packets transmitted by a given presently authorized managed data source in a given operational time period as a way of ascertaining BW (Figure 13, bandwidth allocation counter 166; col. 11, lines 4-14; The current bandwidth allocation counter 166 indicates how much bandwidth is currently available for a particular input-output port for transmission of a packet. The counter 166 is decremented by one every time slot the input port(i) accepts a grant from the output port (j). It is noted that a grant is an indication to allow allocation of bandwidth in order to transmit packets.); and

reinitializing the count each operational time period count (Figure 13, peak time slot rate down counter 162; col. 10, lines 56-63; When the value is counted down to zero, the down counter 162 generates a signal to the current bandwidth allocation counter 166 adding one bandwidth allocation for the associated input port. In this instance, by generating a signal to add one bandwidth allocation, the count is reset to a value.).

Art Unit: 2416

In view of the above, having the system of further modified Chapman then given the well-established teachings of Lee, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of further modified Chapman as taught by Lee in order to fairly and efficiently arbitrate among the requesting input ports (col. 1, lines 24-35).

23. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (US 6,628,609; hereinafter Chapman) in view of Bly et al. (US 2004/0042399; hereinafter Bly).

As to claim 20, Chapman shows means (Figure 8, Bandwidth Control System) for comparing payload class against class restriction status to permit access of payload to the multiplex communication path (Figure 5-6; col. 1,4 lines 34-67; the class of the incoming packet is determined based on information within the packet (i.e. TOS, source address, destination address or a combination). Further the program element transfers the IP packet to its corresponding virtual queue by consulting/comparing against a mapping table. The table 602 maps variables traffic class, input port, and output port to a particular virtual queue.).

Chapman does not show a credit allocation mechanism interconnected to said shaper apparatus for allocating credits to class restriction status recorded in said shaper apparatus.

However, the above-mentioned claim limitation is well-established in the art as evidenced by Bly. Bly shows an invention which relates to grouping of bandwidth allocations and burst groups in digital networks (Par. 0001).

Specifically, Bly shows a credit allocation mechanism interconnected to said shaper apparatus (Figure 4 shows shaping engine interconnected to credit allocation and bandwidth allocation table) for allocating credits to class restriction status recorded in said shaper apparatus.

Art Unit: 2416

In view of the above, having the system of Chapman then given the well-established teachings of Bly, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Chapman as taught by Bly in order to provide the ability to shape traffic in a cost-effective manner (Par. 0048).

24. Claim 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (US 6,628,609; hereinafter Chapman) in view of Lee et al. (US 7,224,671; hereinafter Lee) in further view of Chapman et al. (US 6,304,552; hereinafter Chapman 552)

As to claim 21, Chapman shows wherein the multiplex communication path is a bus (col. 10, lines 21-22, note that switch fabric can be a common medium bus), and the shaper apparatus further comprising:

storage means (Figure 6, queue 604, 606) operable to enqueue the presently received bus request for transmission when there is an indication that the BW authorized for the present operational period has not already been used (Figure 510 onwards; shows that queue priority is set to Lo when output rate (bandwidth) related requirements does not meet operational requirements. Note that Lo priority requests for transmission are processed after all the Hi priority requests are fulfilled.).

Chapman does not show a plurality of counter mechanisms each operable to maintain a count of remaining managed bus requests that are available for a given entity in a given operational period; reset means for reinitializing each of said counter mechanisms each operational period; first checking means operable to compare received bus requests with a list of entities authorized for managed data bus requests; second checking means operable to access an

Art Unit: 2416

appropriate counter mechanism assigned to the entity presently requesting bus access to determine if BW (Bandwidth) allocation authorized for said entity has already been used in the present operational period; and counter mechanism provides an indication that the BW authorized for the present operational period has not already been used.

However, the above-mentioned claim limitations are well-established in the art as evidenced by Lee. Specifically, Lee shows a plurality of counter mechanisms (Figure 13 shows a diagram of one of the data rate controllers 150. Note that each of the controllers 150 contain bandwidth allocation counter 166) each operable to maintain a count of remaining managed bus requests that are available for a given entity in a given operational period (col. 11, lines 4-14; The current bandwidth allocation counter 166 indicates how much bandwidth is currently available for a particular input-output port. The counter 166 is decremented by one every time slot the input port(i) accepts a grant from the output port (j). It is noted that a grant is an indication to allow allocation of bandwidth in order to transmit packets.);

reset means for reinitializing each of said counter mechanisms each operational period (Figure 13, peak time slot rate down counter 162; col. 10, lines 56-63; When the value is counted down to zero, the down counter 162 generates a signal to the current bandwidth allocation counter 166 adding one bandwidth allocation for the associated input port. In this instance, by generating a signal to add one bandwidth allocation, the count is reset to a value.);

second checking means (Figure 13, service counter 168) operable to access an appropriate counter mechanism assigned to the entity presently requesting bus access to determine if BW (Bandwidth) allocation authorized for said entity has already been used in the present operational period (col. 11, lines 21-29; A service count counter 168 tracks every time

Art Unit: 2416

one of the input ports(i) accepts a grant from one of the output ports (j). The counter 168 includes a register that tracks all input port and output port connections. For example, in a network processing device having eight input ports and eight output ports, the counter 168 tracks for each time slot which of sixty-four different possible connections are established by the cross switch 24. These statistics are then used to observe the throughput for all sixty four input port-output port pairs. Note that a grant is an indication to allow allocation of bandwidth in order to transmit packets.); and

counter mechanism provides an indication that the BW authorized for the present operational period has not already been used (col. 11, lines 4-14; The current bandwidth allocation counter 166 indicates how much bandwidth is currently available for a particular input-output port. The counter 166 is decremented by one every time slot the input port(i) accepts a grant from the output port (j). It is noted that a grant is an indication to allow allocation of bandwidth in order to transmit packets.).

In view of the above, having the system of Chapman then given the well-established teachings of Lee, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Chapman in order to fairly and efficiently arbitrate among the requesting input ports (col. 1, lines 24-35).

Still, modified Chapman does not show first checking means operable to compare received bus requests with a list of entities authorized for managed data bus requests.

However, the above-mentioned claim limitations are well-established in the art as evidence by Chapman 552. Chapman 552 shows a similar invention to Chapman that specifically discloses a control mechanism prevents and reduces congestion which may occur

Art Unit: 2416

within the switch fabric and at the level of the input and output ports. The system also supports priorities, routing HI priority request data packets over the switch fabric before LO priority request data packets, and discarding LO priority data packets first when controlling congestion (abstract).

Specifically, Chapman 552 first checking means (Figure 8, controller 808) operable to compare received bus requests with a list of entities authorized for managed data bus requests (Figure 9, step 902; The controller 808 determines whether the packet is to continue on the ring, or whether it is traffic for the local access point router. Assume that the data packet is found to have a destination address different from that of the local access point router, in other words it is to continue on the ring. The packet is queued by source within the transport node's reserved storage space 806, and the queue to be used for loading of the packet is determined at step 906. If the source address does not correspond to a queue already set, a new queue is dynamically created.).

In view of the above, having the system of modified Chapman then given the well-established teaching of Chapman 552, it would have been obvious to one of ordinary skill in the art to modify the system of modified Chapman as taught by Chapman 552 in order to improve the management of IP-layer bandwidth allocation and packet discard within a lossy data communication network arrangement (col. 2, lines 55-57).

25. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (US 6,628,609; hereinafter Chapman) in view of Lee et al. (US 7,224,671; hereinafter Lee).

Art Unit: 2416

As to claim 22, Chapman shows wherein the multiplex communication path is a bus (col. 10, lines 21-22, note that switch fabric can be a common medium bus), and the shaper apparatus further comprising:

comparison means (Figure 2, fabric controller 208) operable to ascertain when received bus requests are authorized for managed data treatment (Figure 5, step 522, note that the fabric controller grants permission of transmission of packets based on the request sent by a Hi priority queue.);

checking means (Figure 8, bandwidth controller) operable to access an appropriate allocation tracking mechanism assigned to the entity presently requesting bus access to determine if BW (Bandwidth) allocation authorized for said entity has already been used in the present operational period (Figure 5, note that prior to granting a request, output rate is determined in order to check whether the output rate meets the required operating parameters (see steps 510, 514).); and

means (Figure 6, queue 604, 606) operable to queue the presently received bus request for transmission when the check of the counter mechanism provides an indication that the BW authorized for the present operational period has not already been used (Figure 510 onwards; shows that queue priority is set to Lo when output rate (bandwidth) related requirements does not meet operational requirements. Note that Lo priority requests for transmission are processed after all the Hi priority requests are fulfilled.).

Chapman does not disclose a plurality of reset-able time slot allocation tracking mechanisms each operable to maintain a count of remaining managed bus requests that are

Art Unit: 2416

available for a given entity in a given operational period and which are reinitialized each operational period.

However, the above-mentioned claim limitations are well-established in the art as evidenced by Lee. Specifically, Lee shows a plurality of reset-able time slot allocation tracking mechanisms (Figure 13 shows a diagram of one of the data rate controllers 150. Note that each of the controllers 150 contain bandwidth allocation counter 166) each operable to maintain a count of remaining managed bus requests that are available for a given entity in a given operational period (col. 11, lines 4-14; The current bandwidth allocation counter 166 indicates how much bandwidth is currently available for a particular input-output port. The counter 166 is decremented by one every time slot the input port(i) accepts a grant from the output port (j). It is noted that a grant is an indication to allow allocation of bandwidth in order to transmit packets.) and which are reinitialized each operational period (Figure 13, peak time slot rate down counter 162; col. 10, lines 56-63; When the value is counted down to zero, the down counter 162 generates a signal to the current bandwidth allocation counter 166 adding one bandwidth allocation for the associated input port. In this instance, by generating a signal to add one bandwidth allocation, the count is reset to a value.).

In view of the above, having the system of Chapman then given the well-established teachings of Lee, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Chapman in order to fairly and efficiently arbitrate among the requesting input ports (col. 1, lines 24-35).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REDENTOR M. PASIA whose telephone number is (571)272-9745. The examiner can normally be reached on M-F 7:30am to 4:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aung S. Moe/
Supervisory Patent Examiner, Art Unit 2416

/Redentor M Pasia/
Examiner, Art Unit 2416

Application/Control Number: 10/718,936

Page 36

Art Unit: 2416